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ABSTRACT

Of all cognitive styles, field dependence/independence (FD/I) is by far the most researched and has the greatest application potential to educational problems. Briefly stated, the FD/I dimension refers to people's ability to experience and interpret their environment in terms of a global versus analytic continuum. Field dependents are likely to favor vocational domains that have interpersonal emphasis and require social skills whereas field independents tend to show interest in domains emphasizing cognitive skills over interpersonal relations. Perhaps the most pervasive finding of all the FD/I research has been that field independents are more proficient readers than field dependents. Another implication from the research concerns structural provision for reading. All children seem to profit from structure, but field dependents benefit the most. This means that text headings, advanced organizers, outlines, purpose-setting questions, and semantic maps are structures that should help reading. Since field dependents seem to have more proficiency in social skills and in operating within a social context, the reading program should allow for plenty of social interaction among readers. As research continues in the FD/I area, more powerful suggestions for reading instruction may be indicated. FD/I research could help both shed light on individual differences in the reading process and devise instructional techniques to enable all children to gain and enjoy literacy. (HOD)

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Cognitive Style and Reading: Implications From Field Dependence Research for Reading Instruction

A Paper Presented
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Over the past few years a new bandwagon has been travelling through educational circles. That bandwagon goes by several names, the two most prevelant ones are learning styles and cognitive styles. The leaders of this movement claim that people have different ways of processing and organizing knowledge, etc. A popular implication from this says that optimal reading instruction occurs when we find each learner's particular learning style and prepare instruction in accord with the various styles found within a classroom (see, for example, Pierce, Dunn, and Sanders, 1981).

There is no doubt that this field of cognitive styles has recently caught the eye of educators and is rapidly expanding in popularity as well as research. Some very solid and promising work is coming out of the field. On the other hand, however, there are some advocates who are proposing models of cognitive styles and making claims with little or no research to support their claims. It could be a tremendous folly for educators to invest heavily in a curriculum based upon one of these ill-conceived and underdocumented learning style models no matter how intuitively appealing they may be.

This paper takes one of the oldest and most well-researched cognitive style paradigms, field dependence/independence (FD/I) and analyzes it in terms of one specific and crucial area of the curriculum, reading. More to the point, this paper will review the FD/I research that has been applied to reading. From this review a critical discussion of implications and questions for practice and further research will ensue.

Field Dependence/Independence: An Overview

Field dependence/independence has been studied extensively for over three decades (Witkin, Moore, Goodenough, and Cox, 1977). Of all the cognitive styles it is by far the most well-researched and has the greatest application potential to educational problems (Witkin, et. al., 1977 and Guilford, 1980). This is clearly no overnight product of some academic fad.

Briefly stated, the FD/I dimension refers to a person's ability to experience and interpret his or her environment in terms of a global versus analytic continuum.

Witkin and Goodenough (1977) define the FD/I cognitive style as the tendency in individuals to function with more or less autonomy from external referents. Field independents tend to perceive (separate) things clearly from a background and tend to see specific referents as fused with the background. There are several ways to measure this cognitive style. However, most measurement procedures involve the visual perception of a specific figure from a complex background or the location of the true upright from a tilted or deceptive background. Those who are more able to perceive the figures from the background or locate the true upright are considered field independent. That is, they tend to be able to operate or function independent of a background field.

Researchers have hypothesized that the FD/I cognitive style is an organism-wide process and is pervasive across several human activities, social and educational as well as cognitive (Goodenough and Witkin, 1977, Witkin and Goodenough, 1977, Witkin, et. al., 1977). Some examples should illustrate this pervasiveness. Field dependents tend to be more attentive to social frames of reference than field independents (Ruble and Nakamura, 1972). In motivation for learning, Witkin, et. al. (1977) reported that field dependents are more reliant on external reinforcements and externally defined goals while field independents are more responsive than dependents to intrinsic reinforcements and goals. Packer and Bain (1978) note that field dependent teachers prefer warm and personal learning environments. Independent teachers prefer situations that are more impersonal and are oriented toward the cognitive aspects of the classroom such as the organization of student learning. Leadership appears to be related to FD/I. Hoffman (1978) found that field independent sixth grade boys tended to be leaders in groups having both styles in their membership. Finally, a large number of studies appear to demonstrate a FD/I manifestation in persons' interests and career choices (Witkin, et. al., 1977). In general, field dependents are likely to favor vocational domains which have interpersonal emphasis and require social skills, such as social worker, clinical psychologist, business personnel director, elementary school teacher, etc. Field independents tend to show interest in domains where cognitive skills are

emphasized over interpersonal relations. Such career choices include physicist, experimental psychologist, business production manager, industrial arts teacher, etc.

Which Style is Better?

Witkin, et. al. (1977) and Witkin and Goodenough (1977) make it plainly clear that they consider neither cognitive style to be superior or better than the other. The dimension is bipolar in nature, with one pole being high in cognitive structuring and low in interpersonal competencies (field independence) and the other pole characterized as high in interpersonal competencies but low in cognitive structuring (field dependence). This bipolarity makes this style value-neutral in the sense that each pole has characteristics that are adaptive to particular situations. The research done on vocational preferences by cognitive styles, that people favor and do better in vocations to which their cognitive style suits them, attests to this value-neutrality of the styles. Each cognitive style is more adaptive in certain contexts.

F D/I and Reading

Although the research done on FD/I in many areas has been extensive, the number of studies looking at reading in terms of this cognitive style has not been as large as one might expect. FD/I has apparently never been in vogue with reading researchers and reading has not been a favored area of FD/I investigators. Still a number of interesting studies do exist. Several will be reported here and be followed by a discussion of implications of FD/I for reading instruction.

Some of the first studies compared the general reading ability and performance of field dependents and independents. Stuart (1967) and Wineman (1971) found evidence that field independent fourth- through eighth-graders tended to have higher levels of reading achievement than dependents as measured by standardized tests. Readence, Baldwin, Bean, and Dishner (1980) found that field independent eight-graders tended to outperform dependents on cloze tests of comprehension and vocabulary tests. In an investigation of study techniques in reading (paraphrasing, mapping), Smith and Standal (1981) found that field independent community college students had overall superior

comprehension when compared to field dependents regardless of the study technique used. Similarly, Provost (1981) gave college students one of two types of texts on the same content to learn. One required reading only while the other required interaction in the form of answering questions and discriminating choices within the text. On both immediate and delayed tests of recall the field independents significantly outperformed the dependents regardless of the type of text read. Wilcox, Richards, and Merrill (1977) provided high school students with various forms of a text to read and had them answer application type questions related to the text. The field independents performed significantly better than the dependents when all forms of the text were taken together. Guyer and Friedman (1975) compared learning disabled and normal boys (ages 8-13) on a variety of measures. The L.D. boys were poorer readers than the normal boys and also tended to be more field dependent. In a study of reading attitudes Blaha and Chomin's (1982) findings suggest that field dependent fifth-grade students perceived themselves as having difficulty with reading and were willing to acknowledge it. Conversely, field independents reported the least amount of experienced difficulty.

Thus, one of the first overarching and consistent findings in this line of research has been that good readers tend to score higher on measures of field independence than poor readers. Independents tend to be good readers while dependents tend to be less proficient readers. Provost (1981) suggests that one reason for this is that field independents may employ more effective cognitive strategies in reading than field dependents. More specifically, Guyer and Friedman (1975) note that differences in reading ability between L.D. children (dependents) and normal children (more field independent) may be due to a lack of ability to differentiate in the learning disabled children. The L.D. children may not be able to differentiate between words with similar meanings. Further, their organization of words in memory may be global, resulting in problems in accessing the precise lexical entry desired.

General reading ability is a broad area and does not answer questions concerning

differences in specific reading processes along the FD/I dimension. Miscue analysis permits researchers to view certain aspects of the reading process in a more detailed way. Early research in using miscue analysis in relation to FD/I is now beginning to emerge. Scott, Annesley, Maher and Christiansen (1980) have explored miscues in oral reading for eighth-graders on content materials. They found that both below and above-average field dependents made less grammatically acceptable miscues, demonstrated weaker grammatical relationship patterns, and had poorer retellings of the text than field independents. Both groups used graphophonic cues in reading, however the independents used semantic and syntactic cues to a greater extent. The dependents responded to the text in a passive and observant manner rather than applying what they knew and integrating it with the text. They were more concerned with surface structure and less with meaningful predictive strategies. Scott, et. al. (1980) suggest that dependents not be required to read orally in the classroom as this places priority on accuracy over meaning for them. Also, they suggest that field dependents be shown how to take texts apart, reconstruct them, and the relationships between the parts within the texts. Activities in summarizing and paraphrasing might also help here. Above all, the teacher needs to realize that no one instructional strategy is appropriate for all children. Christiansen, Annesley, and Scott (1980) looked at the silent textual processing of ninth-graders using an analysis of the Cloze task. They found that the patterns of miscues varied among the cognitive styles most greatly at the frustation level texts. At this level the field independents demonstrated through miscue analysis a greater control over meaning (semantic acceptability of errors) and syntax (syntactic acceptability of errors) than the dependents. In general, these researchers recommend the use of organizers, overviews, purpose setting questions, etc. for all students to help them organize the text for understanding. They also suggest heterogeneous grouping of children in reading instruction to maximize interplay of styles.

Of paramount interest to reading researchers of late has been the organization of knowledge in memory and how it can affect reading comprehension (popularly referred to as schema theory). Spiro and Tirre (1980) investigated how field dependents and independents

would comprehend two separate but similar texts. The first text concerned buying food items from a supermarket. The other text was about buying the same items at a restaurant. The second text offered more structure and constraints since the number of items one can normally buy at a restaurant is usually less than a supermarket. The number of alternative choices one has to choose from in memory is less. Thus the restaurant text should be better remembered if the reader uses the knowledge he already possesses in his head. Spiro and Tirre found that the field independents' recall increased from 36% to 60% from the supermarket to restaurant texts. Dependents, conversely, increased their recall by only 3%, from 37% to 40%. This suggests that field independents have better schemata (background) utilization than dependents, rather than just a better general ability to recall. Field dependents are not as successful in their use (integration) of background knowledge to comprehend a text as are the field independents.

A few studies have looked at the ability of field independents and dependents to profit from specific reading strategies and aids. Pierce (1980) asked kindergarten and third-grade field dependent and independent children to recall a story text under two conditions. These conditions were an imagery strategy (make an image of the text) and a non-imagery strategy (think about and try to remember the text). The independents had significantly better recall than the dependents at all grade levels and conditions. The third-grade independents had the largest benefit from the imagery strategy. Pierce suggests that imagery utilization may be moderated by individual differences in FD/I. Field independents are more able to combine parts of stories to assist their recall, and this ability is enhanced or promoted by imagery use.

Spiro and Tirre (1980) suggested that field dependents are not as adept in applying their own structures to a text as independents. Two ways of compensating for this would be prompting the dependents to apply their own structures in a particular way or to add additional structure which the reader can employ. The next two studies address these suggestions. Satterly and Telfer (1979) gave one of three treatments to average IQ 15-year-olds. The first treatment consisted of two lessons on word structure. The second treatment had the same lessons plus an advanced organizer for the students. The third treatment consisted of the two lessons and advanced organizer plus specific

references within the lessons to the organizer. These references attempted to draw the learners' attention to the superordinate ideas in the organizer. All subjects were given a test of transfer of learning. Although both field dependents and independents had the best effect with the third treatment, the field dependents demonstrated the greater gain with it. Satterly and Telfer conclude, "Thus, field dependent subjects, whose ability to deal with formal structures is limited, are helped by its (the advanced organizer's) use but only where the teacher emphasizes its properties during the lesson" (p. 176).

Brooks, Dansereau, and Spurlin (1981) gave a group of general psychology college students one of three 2,500 word college-level passages to read. The texts differed in that one had headings in the text and the students were given instruction and practice in using such a text. A second text had headings only and a control text had no headings. After reading the students were given various measures of recall and comprehension (essay exam, outline exam, short answer exam, and multiple choice exam). The field independents outperformed the field dependents in all cases. However all groups tended to better their performance on selected measures as additional structure was added to the text. Indeed, the performance of dependents under the headings with instruction condition approached that of the independents with headings only and surpassed the independents in the control text condition. Thus, this suggests that providing structure in the text and instruction in using it may not only help increase the field dependents' performance, but also increase it to the point of the independents' normal performance.

Discussion and Implications

What does all this mean for the reading teacher? How can the reading teacher put this knowledge to work for his or her students? Perhaps the most pervasive finding in the research has been that field independents are more proficient readers than field dependents. How can we use this? Three possibilities come to mind. First, we could try to turn field dependents into field independents. There is evidence to suggest

that this is a possibility (see Blackman and Goldstein, 1982). Second, we could develop separate and specific curricula for each group in order to capitalize on their cognitive strengths. Third, we could simply let things be as they are and admit that field dependents will never be as adept in reading as field independents.

Although these may seem to be extreme suggestions they are being given serious consideration by some authorities in the field. For example, Price, Dunn, and Sanders (1981) suggest that specific treatments and curricula to help field dependents and independents develop their reading skills begin at the preschool level. And, since research is being conducted in modifying a person's FD/I orientation (see Blackman and Goldstein, 1982) it must mean that such actions are being seriously entertained.

I submit, however, that neither of the three suggestions are tenable at the present time. The main reason for this assertion is simply that not enough is known about this dimension and its affect on reading and other domains of human activity to make such drastic recommendations. Other objections can also be brought up. In order to implement either of the first two suggestions (to modify FD/I in persons or to set up separate curricula) a large scale testing program would be needed to measure all children's FD/I orientation. This would cost a fairly large sum and would be an additional drain on instructional time. Some tests of FD/I are individual (e.g. Children's Embedded Figures Test) and would be extremely time-consuming if given to all children. Furthermore, this would necessitate some prescriptive instructional curricula (which currently doesn't exist) based upon the test results. Additionally, this testing could give rise to another kind of stereotyping of individuals.

Although Blackman and Goldstein (1982) review research that shows that FD/I can be modified, they too add a large caveat. They state that even if modification is possible it remains to be seen if such modifications will lead to improved academic performance. Again, the knowledge is not there. Witkin et. al. (1977) point out that FD/I goes beyond mere academic domains into such areas as personality, career choice, etc. One must wonder and question how changes for academic purposes

will affect the personality, ambition, goals, etc. of the subjects. Indeed, Witkin et. al. (1977) and Witkin and Goodenough (1977) suggest very strongly that each dimension has its strengths and weaknesses in various contexts. Neither is better across all contexts. A change on the FD/I dimension means to add some strengths, but also to lose others. Those contemplating modification of children in the FD/I dimension should bear in mind Dewey's (1916) assertion:

> "A progressive society counts individual variations as precious since it finds in them the means of its own growth. Hence a democratic society must, in consistency with its ideal, allow for intellectual freedom and the play of diverse gifts and interests in its educational measures" (p. 357).

Although developing specific curricula to help each group may seem intuitively correct, again not enough is known to operationalize such a notion. Instructional programs have yet to be devised let alone thoroughly tested. How are other cognitive style dimensions such as impulsivity-reflectivity to be incorporated into the curricula? Additionally, with differentiated and homogeneously grouped instruction, how do we insure that students are prepared for the real and diverse world that awaits them outside the schoolyard? We already have differentiated reading instruction (high, middle, and low groups) that has not been as successful as we might have hoped (Allington, 1980). An intriguing and ironic hypothesis from current practice comes to mind here. Since field dependents tend to be poorer readers they would also tend to be in the low reading groups. As Collins (1982) and Allington (1983) point out, these groups get extended practice in word and sound analysis and decontextualized reading while good readers get instruction in passage comprehension. Analysis is just the thing that field dependent children have difficulty with. Thus we might be teaching some children to read using the very skills that they are weakest in.

Finally, the third possibiltiy suggests that we acknowledge field dependents' problems but do nothing about them. Of course the question then arises, why even do this kind of research to begin with if it is not to be used?

I feel that even though there does not exist sufficient knowledge to implement some grandiose plan in education for FD/I, there is enough research that has been completed to make, right now, some profitable recommendations for teachers of reading.

First, the existing research clearly shows that differences do exist in children. This calls on teachers to be better observers of children. Teachers don't need tests to tell them that differences exist in children. These should be noticeable through careful observation, provided the teachers know what they are looking for. Teachers need to respond in an informed way to the things that children are actually doing (Zutell, 1977) and not blindly follow some teacher's manual. But in order to respond to children's actions teachers need to carefully observe differences and similarities in them.

Since the natural development in the FD/I dimension seems to be from FD (holistic context) to FI (analysis, elemental orientation) (Witkin, et. al., 1977), reading should perhaps move in this same direction from whole to part. Instruction might begin with whole, meaningful texts and then gradually be decontextualized to sentences and word study, and finally get into analysis of word parts, sounds, and letters. Meaning, above all, should constantly be emphasized in instruction.

A direct implication from the research concerns the provision of structure for reading. All children seemed to profit from structure, but field dependents benefitted the most. Headings in the text, advanced organizers, outlines, purpose setting questions, semantic maps, etc. are all structures that should help reading. One other point here, instruction should be given in the use of these structural aids in order that the students get maximum benefit from their use. Incorporating these aids without showing the children how to use them may be of little help to them.

Background knowledge and its integration with the text are of utmost importance (see, for example, Spiro and Tirre, 1980). Teachers should give students background for reading when the students don't have it. Teachers should also instruct students in

using or integrating their knowledge with the text. This could happen through discussion before and/or after reading the text.

Field dependents seem to have more proficiency in social skils and in operating within a social context. Teachers should make sure that the reading program is not completely individualized to the point where social interaction is extinct. Instead, the reading program should allow for plenty of social interaction among the readers. Hepler and Hickman (1982) give an excellent description of a reading program which embodies the notion of a "community of readers" as an integral part of the program.

Goodenough (1976) says that the literature indicates that, in testing predictions, field dependents tend to ignore some cues in constructing hypotheses about concepts. They are more dominated by the salient cues. Reading also involves hypothesis construction (Goodman,1976 and Smith, 1982). If the salient cues we teach children to use are sounds and letters we might expect field dependents to overly rely on these and construct less meaningful interpretations or hypotheses for texts. Teachers, then, should help students pay attention to all cues in the text, semantic and syntactic as well as graphophonic.

It may be ironic that some of the things we have been doing in the name of good instruction and compensatory education such as over-reliance on testing over good observation, instruction for poor readers based on meaningless, decontextualized parts of words, and totally individualized instruction without peer or social interaction may be some of the things that are wrong with our education system. These are some of the things we need to investigate further.

As research continues in the FD/I area perhaps more powerful suggestions for reading instruction may be implicated. The future looks promising. FD/I research could help enlighten individual differences in the reading process and devise instructional techniques to help all children gain and enjoy literacy. Some possible questions that research might help answer include the following:

1. Are individual differences in the reading process reflected in FD/I?
2. Are there differences in comprehension of different contents (social vs. technical, narrative vs. expository) by cognitive style?
3. Do differences exist in reading interests along the cognitive style continuum?
4. Are there instructional techniques and curricula that work differentially better for one style over another?

We must realize that cognitive style offers no quick fix to reading problems. It is no panacea. It does have a lot to offer but we must be sure about what these cognitive styles are, how they are manifested in children in all their domains, how they can be accurately measured, and what we should do instructionally in response to this knowledge. Until we know this it is best to take a cautious approach. Use what we feel certain about, change it if it doesn't work out, and wait for sure answers to some critical questions before prematurely accepting all recommendations as the truth.

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